ER Site No. 165: Bldg 901 Septic System

ADS: 1303
Operable Unit: Tech Area II

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Site History

Building 901, the Systems Analysis Facility, was constructed in 1948 and is located just west of the main entrance to Technical Area II (TA-II). In the late 1940s and early 1950s, Building 901 was an entry and exit checkpoint for personnel working on nuclear weapons assembly in TA-II. It was also an administration building, housing a shower facility, a laundry for worker coveralls and clothing, and office space.

In the early 1960s, after weapons assembly projects were terminated, the building reportedly was used as an high explosive (HE) synthesis laboratory. The laboratory was not used for production, but was used only as a secondary HE pressing facility for research and development. Since about the mid-1960s, the building has been used for office space and as a workshop. The building is slated for demolition.

The floor drains in Building 901 discharged into a 1000-gal septic tank which subsequently discharged into an extensive drainfield system. The sanitary leachfield lines consisted of 4-in. diameter vitrified clay; the infiltration area is located outside TA-II, southwest of the perimeter fence. The septic system was designed to handle the large volume of water generated by the employees that showered and washed their work clothes in the building.

During the late 1940s and mid-1950s, the amount of effluent discharged into the septic system was unknown, but it reportedly may have received millions of gallons of effluent. Because all floor and shower drains reportedly discharged into the septic system, the septic tank and leachfield probably received contaminants, which may have included degreasing compounds, HE residue, and phosphate detergents generated by laundry washing and showering. Metal complexing may have occurred because of the formation of soluble phosphate complexes. However, radionuclides, such as depleted uranium and tritium, reportedly were not used. The septic system was shut down in late 1992 when the building drains were connected to the City of Albuquerque sanitary sewer system.

Although it was not a production-scale facility, HE compounds and other chemicals reportedly were used at the HE synthesis laboratory. The HE compounds included pentaerythritol tetranitrate (PETN), hexanitroazobenzene (HNAB), cyclotetramethylene tetranitramine (HMX), cyclotrimethylene trinitramine (RDX), Compound B, baratol, and black powder. Some mercury, used in manometers, may have been accidentally spilled on the floor. Other potential constituents of concern (COCs) that may have been discharged include lead azide, acetone, and heavy metals. Cobalt may have been used with the lead azide, but reportedly was not washed down the floor drains. Former Sandia National Laboratories/New Mexico (SNL/NM) employees also have stated that degreasers were typically used to clean the floors in the building.

In order to determine that no potential threats exist to human health or the environment at this site, environmental testing was conducted. Testing included a surface radiation survey, passive survey, septic tank sampling, and borehole drilling and soil sampling. Preliminary results indicated that further investigation was not necessary and that ER Site 165 should be removed from the ER site list.

Waste was removed from the septic tanks, and the empty tanks were inspected by New Mexico Environmental Department (NMED) in late 1995. Tank concrete samples were collected to verify that no COCs remained.

The regional aquifer in the vicinity of ER Site 165 is within the upper unit of the Santa Fe Group. The depth to the regional aquifer in the nearest monitor well to ER Site 165 (TA2-NW1-595) is approximately 520 feet (ft) below ground surface (fbgs) or 4,889.3 ft above mean sea level (famsl). A shallow water-bearing zone also exists in the vicinity of ER Site 165. The depth to the shallow zone ranges from approximately 267 to 320 fbgs (5,081 to 4,889 famsl). Monitor wells TA2-SW1-325, TA2-NW1-320, WYO-2, TA2-W-19, and TA2-W-01 are located in the vicinity of ER Site 165 and are screened in the shallow water-bearing zone.

The area is essentially flat, with a gentle slope to the west of approximately 4 percent. Tijeras Arroyo, the largest drainage feature at SNL/NM, is located approximately one half mile from the site. The surface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains.

Surficial deposits are underlain by the upper unit of the Santa Fe Group. In this area, the piedmont-slope alluvium may be up to 100 ft thick, and the upper Santa Fe unit is approximately 1,200 ft thick.

The piedmont-slope alluvium, which was deposited by the ancestral Tijeras Arroyo, is generally coarse-grained sand and gravel. The upper Santa Fe unit was deposited from 5 to 1 million years ago and consists of coarse- to fine-grained fluvial deposits from the ancestral Rio Grande that intertongue with coarse-grained alluvial-fan/piedmont-veneer facies, which extend westward

from the Sandia and Manzanita Mountains. ER Site 165 is near the easternmost limit of the ancestral Rio Grande deposits.

Several rift-bounding faults are located east of ER Site 165. The nearest is the Sandia fault-zone, characterized by north-trending, west-dipping normal faults. The westernmost fault is located approximately 1.2 miles east of the site.

Constituents of Concern

Volatile organics:
acetone
dichloromethane (methylene chloride)
TCE
2butanone
tetrachloromethane (carbon tetrachloride)
toluene
xylene
hexane
Alcohols HE compounds:

PETN
HNAB
HMX
RDX
Compound B
Baratol
possibly black powder
phosphate detergents
mercury
lead azide
cobalt

Current Hazards

There are no hazards at this site related to contamination of surface or subsurface soils.

Current Status of Work

Based on the analytical sampling results, there appears to be no contamination resulting from the past use of the above chemicals. Therefore, this site has been proposed for an NFA determination.

Future Work Planned

Additional soil sampling was performed in 2000. An RSI data submittal with a revised risk assessment will be submitted to NMED.

Waste Volume Estimated/Generated

Nine 55-gal drums of mixed waste were generated and all have been disposed off-site.

Information for ER Site 165 was last updated Jan 24, 2003.